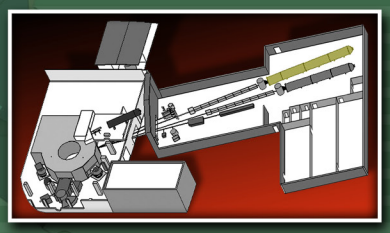
# Instrument Fact Sheet

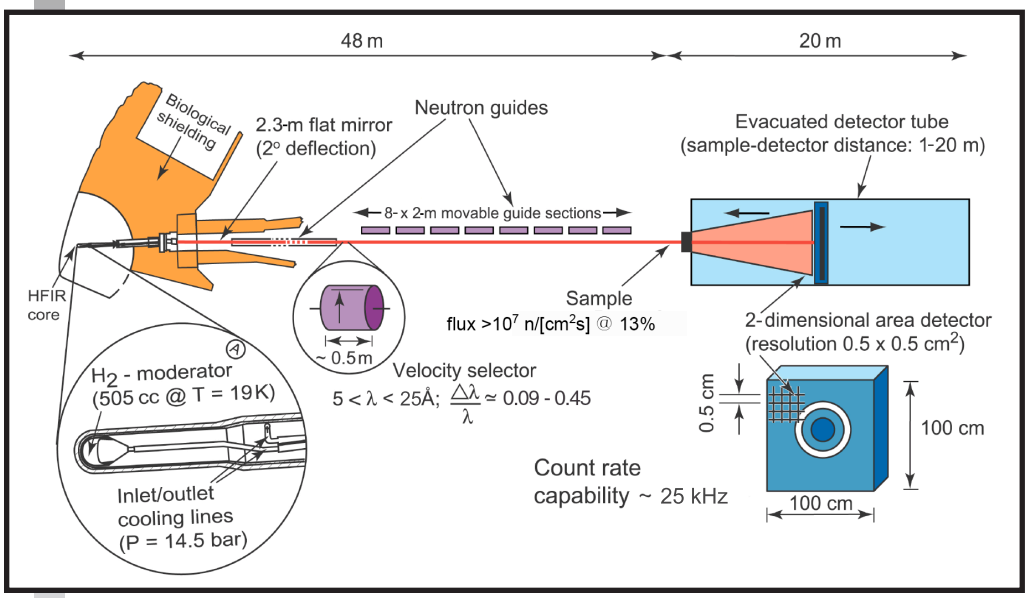
BEAM LINE **CG-2**

HIGH FLUX ISOTOPE REACTOR



## General-Purpose SANS – Small-Angle Neutron Scattering Diffractometer

The general-purpose SANS diffractometer is optimized for providing information about structure and interactions in materials in the size range of 0.5–200 nm. It will have cold neutron flux on sample and capabilities comparable to those of the best SANS instruments worldwide, including a wide range of neutron wavelengths λ=5–25 Å, resolution δλ/λ=9-45%, and a 1-m$^2$ area detector with 5- × 5-mm$^2$ pixel resolution with a maximum counting capability of up to 25 kHz. The sample-to-detector distance can be varied from 1 to 20 m, and the detector can be offset horizontally by up to 45 cm, allowing a total accessible Q range of from <0.001 to 1 Å$^{-1}$. The 2-m sample environment area will accommodate large, special-purpose sample environments such as cryomagnets, furnaces, mechanical load frames, and shear cells.




## Specifications

| | |
|---|---|
| Beam spectrum | λ=4–25 Å<br>Δλ/λ=9–45% |
| Sample-detector distance | 1.1–19.4 m |
| Detector offset | 0–45 cm |
| Source-sample distance | 1.8–17.4 m |
| Max flux on sample | >2×10$^7$ n/cm$^2$/s at λ=4.75 Å, Δλ/λ=14% |
| Detector | commissioning |
| Detector count rate | commissioning |
| Momentum Transfer range | Q =0.0007–1 Å$^{-1}$<br>$Q_{max}/Q_{min}$ 10–20 |

Status: Operational

## Applications

- Soft condensed matter: molecular self-assembly and interactions in complex fluids; intermediate order in glassy systems, polymer solutions, gels and blends, colloids, micelles, and microemulsions
- Hard condensed matter: phase separation, grain growth, and orientation in metallurgical alloys, nanocomposites, advanced ceramics, and porous catalytic and adsorbent materials
- Magnetic systems: flux lattices in superconductors, ferrofluids, and the relationship between structural and magnetic domains and ordering

## For more information, contact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http://neutrons.ornl.gov/instruments/HFIR/CG2/


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